What is claimed is:

1. An intelligent ink cartridge comprising at least an ink chamber for storing ink, an electronics module which can store identification information of the ink cartridge and ink remaining data, wherein,

the electronics module is a micro-controller with embedded non-volatile memory, and

the micro-controller is used to control calculation and access of ink remaining data in the ink cartridge to improve the maximum of ink volume of the ink cartridge.

2. An intelligent ink cartridge according to claim 1, wherein said non-volatile memory is an EEPROM.

3. An intelligent ink cartridge according to claim 1, wherein said micro-controller is a RISC 8-bit micro-controller of CMOS or a micro-controller with higher capability.

4. An intelligent ink cartridge according to any one of claims 1, 2 and 3, wherein said micro-controller comprises: an ALU(arithmetic and logic unit) connected to data bus, an EEPROM memory for storing identification information of ink cartridge and ink remaining data, plural registers, interrupt unit, serial periphery interface unit, timer, analog comparator, I/O interface, and a fast flash (or ROM, or other form of program memory) connected to said ALU by said register for storing a program controlling reading and writing operations and calculation of ink remaining data.

5. An intelligent ink cartridge according to claim 4, further comprising a R-C control circuit with time constant of appropriate value, used to distinguish the checking read cycle and the normal read cycle, wherein, said R-C control circuit is connected to the input interface of said micro-controller.

6. A method of manufacturing an intelligent ink cartridge, which comprises at least one ink chamber for storing ink, and an electronics module

storing identification information of ink cartridge and ink remaining data, comprising:

to set a special-purpose micro-controller in the ink cartridge;

to write identification information of ink cartridge and the program controlling access and process operations of ink remaining data into the non-volatile memory of the special-purpose micro-controller;

to carry out the program so that it can meet the requirement of control and reading and writing operations of ink remaining data by an ink jet apparatus when ink capacity of ink cartridge is increased.

7. A method of manufacturing an intelligent ink cartridge according to claim 6, wherein, identification information of ink cartridge and ink remaining data is stored into an EEPROM memory in the special-purpose micro-controller, and said program for controlling access and process operation of ink remaining data is stored into a fast flash in said micro-controller.

8. A method of manufacturing an intelligent ink cartridge according to claim 7, wherein, said program can carry out the steps as follow:

to transfer ink utilization percentage stored in EEPROM to register temp1 in said micro-controller during printer power on or when the ink cartridge is installed on the ink jet apparatus and moved to normal position;

to transfer said ink utilization percentage into said ink jet apparatus from said register temp1 when control signal of the ink jet apparatus is received;

to update the ink utilization percentage at the printing apparatus during printing;

to store the updated ink utilization percentage written into the ink cartridge from the ink jet apparatus into the register temp2 in said micro-controller during printer power off or when the ink cartridge is moved to installation position.

to further carry out the following steps in said micro-controller,

temp3=temp2-temp1;

temp3=temp3/(1+x%), wherein, x% is the targeted increment in ink

capacity of said ink cartridge;

temp1=temp1+temp3;

to store ink utilization percentage updated to EEPROM from said register temp1 and use it as the output from cartridge for the next printer power on read cycle.

9. A method of manufacturing an intelligent ink cartridge according to claim 7 or 8, further comprising a check step for checking whether updated ink utilization percentage is larger than predetermined value y, and adjust the ink utilization percentage if no adjustments had been performed before, wherein x% is the targeted increment in ink capacity and a% is the additional consumption due to the additional head cleaning operation, so as to check whether ink utilization has been adjusted when ink utilization percentage is higher than (x+a)% and the ink utilization is updated, wherein, adj=0 means ink utilization has been not adjusted and adj=1 means it has been done.

10. A method of manufacturing an intelligent ink cartridge according to claim 9, wherein, the check step for checking whether said micro-controller has adjusted ink utilization percentage of a new ink cartridge comprises:

to set an initial status flag into EEPROM of a new ink cartridge, at step 1;

to read and judge said status flag, at step 2;

to subtract (x+a) from the updated ink utilization percentage before storage to EEPROM should the status flag has been not adjusted and updated ink utilization percentage be higher than (x+a)%, and change the flag to signify ink utilization percentage had been adjusted, at step 3.

11. A method of manufacturing an intelligent ink cartridge according to claim 9, further comprising another check step for distinguishing the read cycle that immediately follows a write cycle during printer power off and the read cycle during printer power on.

12. A method of manufacturing an intelligent ink cartridge according to claim 6 or 7, wherein, an R-C circuit with a time constant of appropriate value is connected to an input port of said micro-controller for distinguishing checking read cycle and normal read cycle.

13. An electronics module of an intelligent ink cartridge for storing identification information of the ink cartridge and ink remaining data, wherein, the electronics module is a micro-controller with embedded non-volatile memory and the micro-controller is used to control calculation and access operations of ink remaining in the ink cartridge to improve the maximum ink capacity of the ink cartridge for use with the ink jet apparatus.

14. An electronics module according to claim 13, wherein, said non-volatile memory in said micro-controller stores identification information of said ink cartridge and the program for controlling access and process operations of ink remaining data, so as to still meet the requirement of controlling and reading/writing ink remaining data by said ink jet apparatus when said program is carried out and ink capacity of said ink cartridge is improved.